Annual Surveillance Summary: Bacterial Infections in the Military Health System (MHS), 2017

The EpiData Center (EDC) at the Navy and Marine Corps Public Health Center (NMCPHC) performs ongoing, comprehensive surveillance of bacterial infections considered urgent, serious, and concerning threats as recommended by the Centers for Disease Control and Prevention (CDC). This brief summarizes incidence rates (IRs), subpopulation impacts, prescription practices, and antimicrobial resistance for the following infections among Military Health System (MHS) beneficiaries for calendar year (CY) 2017:

- *Acinetobacter* species
- *Clostridium difficile*
- *Escherichia coli*
- *Klebsiella* species
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- *Pseudomonas aeruginosa*
- Vancomycin-resistant Enterococci (VRE)

Note: To review the annual report for each organism listed above, including a detailed presentation of results and important considerations, please visit http://www.med.navy.mil/sites/nmcphc/epi-data-center/pages/2017-surveillance-summaries.aspx.

Summary of Results

The following tables summarize activity identified for the bacterial infections evaluated among MHS beneficiaries in CY 2017 as compared to weighted historic baseline data from CY 2014-2016.

Table 1. Incidence Rate (IR) and Trends of Selected Infections Among MHS Beneficiaries, CY 2017

Organism	2017 IR	Weighted Historic[a] IR 2014-2016	Two Standard Deviations: Weighted Historic IR	2017	
				Direction	Percent Change[b]
Acinetobacter spp.[c]	5.35	5.39	0.38	↓	0.66
C. difficile	20.6	21.0	2.5	↓	1.8
E. coli	634.9	682.6	29.9	↓	7.0
Klebsiella spp.	94.8	99.7	8.2	↓	4.9
MRSA	47.7	59.5	7.0	↓	19.9
P. aeruginosa	30.6	31.9	1.2	↓	4.0
VRE[c]	1.22	1.46	0.20	↓	16.4

Rates are presented as the rate per 100,000 persons per year.
A **green arrow** indicates an increasing percent change and a **blue arrow** indicates a decreasing percent change.
[a] Historic IR reflects the weighted average of the three years prior to the analysis year.
[b] This reflects the percent change from the weighted historic IR to the IR of the current analysis year.
[c] Results are presented by two decimal places to account for low incidence rates.
Data Source: NMCPHC HL7-formatted CHCS microbiology and M2 databases.
Prepared by the EpiData Center Department, Navy and Marine Corps Public Health Center, on 01 May 2018.

Table 2. Infection Impact: Demographics, Resistance, Prescription Practices, and Infection Setting within the MHS, CY 2017

Organism	Demographics Most Impacted: - Age (in Years) - Geographic Region - Beneficiary Type	Multidrug-Resistance IR[a] and Epi Trend		Prescription Practices and Antibiogram: - Most Frequently Prescribed Drug - Percent Susceptibility	Proportion of Healthcare- (HA) and Community-Associated (CA) or Community-Onset (CO) Cases
Acinetobacter spp.[b]	18-24 OCONUS Active Duty	0.28	↑	Trimethoprim/sulfamethoxazole 88.8%	HA – 36.8% CA – 63.2%
C. difficile[c]	65+ US South Family members	--	--	Metronidazole 62.5%	HA – 14.4% CO – 82.2% Indeterminate – 3.4%
E. coli	18-24 US West Active Duty	120.6	↓	Nitrofurantoin 44.4%	HA –14.5% CA – 85.5%
Klebsiella spp.	65+ US South Family Members	7.2	↑	Nitrofurantoin 34.2%	HA – 28.6% CA – 71.4%
MRSA[d]	18-24 US South Atlantic Active Duty	16.4	↑	Trimethoprim/sulfamethoxazole 96.1%	HA – 26.5% CA – 73.5%
P. aeruginosa	65+ US South Retirees	1.6	↓	Ciprofloxacin 89.7%	HA – 47.9% CA – 52.1%
VRE[c]	65+ US West Retirees	--	--	Daptomycin 100.0%	HA – 82.3% CA – 17.7%

A **green arrow** indicates an increasing percent change and a **blue arrow** indicates a decreasing percent change.
[a] Multidrug-resistance incidence rate (MDR IR). Rates are presented as the rate per 100,000 persons per year.
[b] Rate is presented by two decimal places to account for low incidence rates among *Acinetobacter* species infections.
[c] MDR IRs were not calculated for *C. difficile* or VRE infections.
[d] For MRSA only, the MDR IR column depicts the percentage of MRSA infections with inducible clindamycin resistance within the MHS and not the MDR IR.
Data Source: NMCPHC HL7-formatted CHCS microbiology and M2 databases.
Prepared by the EpiData Center Department, Navy and Marine Corps Public Health Center, on 01 May 2018.

Conclusion

Bacterial activity of interest in the MHS in 2017 exhibited expected trends and closely resembled activity in the general United States population as reported by the CDC and other public health agencies. No significant threat to mission readiness or population health was observed and traditional treatment options remain viable. Continued adherence to infection control practices is recommended in the clinical, occupational, and deployed settings. Please refer to the complete suite of 2017 annual reports for important organism-specific considerations: http://www.med.navy.mil/sites/nmcphc/epi-data-center/Pages/2017-surveillance-summaries.aspx.

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14. ABSTRACT
The EpiData Center at the Navy and Marine Corps Public Health Center performs ongoing, comprehensive surveillance of bacterial infections considered urgent, serious, and concerning threats as recommended by the Centers for Disease Control and Prevention. This brief summarizes incidence rates, subpopulation impacts, prescription practices, and antimicrobial resistance for seven organisms of interest among Military Health System beneficiaries for calendar year 2017. Bacterial activity of interest exhibited expected trends. No significant threat to mission readiness or population health was observed and traditional treatment options remain viable.

15. SUBJECT TERMS
Health Level 7 (HL7), microbiology, surveillance, Military Health System (MHS), antibiotic resistance, Acinetobacter species, Clostridium difficile, Escherichia coli, Klebsiella species, methicillin-resistant Staphylococcus aureus (MRSA), Pseudomonas aeruginosa, vancomycin-resistant Enterococci (VRE), military health

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